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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Gao et al. (6508553, referred to as “Gao” herein).

Regarding claim 1, Gao discloses a method for enhancing facial images taken from a video camera (column 7 line 66-67) comprising the modules of:

- (a) initialization module (see figure 1 and column 7 lines 35-38 disclose calibrating the system), (b) facial feature detection module (column 8 lines 17-25); and (c) superimposition module (see figure 3 and column 8 lines 26-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Gao et al. (6508553, referred to as “Gao” herein) in view of Soatto (6944327).

Regarding claim 2, Gao discloses (a) initialization module further comprises steps for: (b) processing a single image or a plurality of images from said captured plurality of images in order to detect face for an initial face detection (column 13 line 15 to column 16 line 24 disclose detecting the facial edge and detecting the facial shape), (d) verifying said face (column 14 lines 8-29 disclose classifying the facial shape detection), and (e) estimating regions of interest for each facial features in said face (column 14 line 30 to column 15 line 23 discloses finding regions of interest from the initial face detection).

Gao does not explicitly disclose steps (a) and (c). Soatto discloses (a) capturing a plurality of images for an individual or a plurality of people with a single or a plurality of means for capturing images (column 10 lines 15-35 disclose receiving a sequence of images), (c) tracking said detected face in real-time (column 10 lines 24-35 disclose tracking a segmented face throughout a sequence of images),

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Gao a facial tracking and sequence of image acquiring means as taught by Soatto. The reason for the combination is because it makes for a more robust system that track facial regions from a sequence of images can display a chosen eyeglass from frame to frame (see motivation by Soatto in column 10 lines 8-14).

Regarding claim 3, the combination of Gao and Soatto disclose that facial feature detection module further comprises steps for: (a) combining a plurality of real-time facial feature detection approaches to get facial feature coordinate information from said face (see Saotto column 10 lines 24-35 which discloses multiple methods of obtaining

facial feature detection), (b) block-processing of said facial feature coordinate information (Soatto discloses using wavelets in column 10 line 35 and Gao in column 13 lines 26-43 discloses block processing), (c) applying fusion algorithms and geometrical constraints to said facial feature coordinate information (see Gao column 13 line 16 to column 16 line 24 and Soatto column 10 lines 36-54 which discloses using fusion algorithms and geometrical constraints towards the facial features) , and (d) smoothing said facial feature coordinate information (see Soatto column 10 lines 55-65 which discloses altering coordinate information based on user selection)

Regarding claim 4, the combination of Gao and Soatto discloses that the (c) superimposition module further comprises steps for: (a) preparing virtual object images (see Gao column 16 lines 28-53 which disclose preprocessing image frames), (b) validating said facial feature coordinate information (Gao, column 14 lines 30-48 disclose classifying facial feature locations), (c) smoothing (see Soatto column 10 lines 55-65 which discloses altering coordinate information based on user selection), (d) aesthetic processing (see Gao, column 20 line 33 to column 21 line 8 disclose blending transparent frames to make them look more natural), and (e) processing final superimposition (column 21 line 65 to column 23 line 8 disclose superimposition).

Regarding claim 5, the combination of Gao and Soatto disclose that the method further comprises a step for processing touch-free interaction between said individual or said plurality of people and the system, whereby said touch-free interaction with said system enables said individual or said plurality of people to choose said prepared visual object images on a means for displaying to superimpose onto said facial image (see

Soatto column 10 line 15 to column 11 line 26 disclose tracking and the face and superposing the eyeglass frame throughout multiple frames of video in a touch free environment).

Regarding claim 6, please see the rejection of claim 5 above as it discloses the real time superimposing and face tracking.

Regarding claim 7, the combination of Gao and Soatto disclose processing local face detection whereby said verification makes correct facial images to be passed on to said facial feature detection module (column 14 lines 8-29 disclose classifying the facial shape detection).

Regarding claim 8, Gao discloses that the step for estimating regions of interest for each facial features further comprises a step for estimating said regions of interest dynamically, whereby said regions of interest change according to the results from said verification step (column 15 lines 30-70 disclose using a dynamic function to find regions of interest such as mouth positions. The dynamic functions take into account brightness and use dynamic thresholds.), and whereby said regions of interest are used as boundaries for detecting each facial features, such as eyes, nose, and mouth on said detected face (column 14 lines 30-70 disclose finding eyes, the mouth, the chin and finding other boundaries).

Regarding claim 9, Gao discloses the step for block-processing further comprises a step for applying said block-processing to each of said plurality of facial feature detection approaches (column 13 lines 15-63 disclose running the block processing to

find the edges throughout the facial image. This will find edges that are located around all the facial features).

Regarding claim 10, Soatto discloses, wherein the step for smoothing said facial feature coordinates further comprises a step for storing a history of said facial feature coordinates and applying a smoothing algorithm for the current facial feature coordinate using said history of said facial feature coordinates (Soatto, column 10 lines 15-54 discloses choosing a reference frame that is stored in memory and finding the movement of the next frame in order to find current facial feature locations).

Regarding claim 11, Soatto discloses that the step for preparing virtual object images further comprises a step for setting pivot points in said virtual object images (see Soatto column 11 lines 16-26 discloses altering the template of the eyeglass frame in order to allow the frame to move around on the head of a user).

Regarding claim 12 Soatto discloses a step for processing rotation and translation of said virtual object images (see column 10 line 55 to column 11 line 8 discloses a step of translation and rotation).

Regarding claim 13, please see the rejection of claims 1 and 2 above and see figure 2 of Soatto which discloses an apparatus.

Regarding claim 14, Soatto discloses one or a plurality of camera and one or a plurality of frame grabber (see figure 2 item 68 and item 62, which disclose a camera and a means for selecting frames).

Regarding claims 15-16, the examiner takes official notice that it would have been exceedingly well known at the time of the invention to one of ordinary skill in the

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art to include in Soatto and Gao a dynamically field of view control and a USB or firewire camera. The reason is because its is very common method to control a field of view of a camera in order to change the area that one wishes to take a picture. And USB and firewire camera are exceedingly common and Soatto already discloses using a digital camera.

Regarding claim 17, please see the rejection of claims 2-5 which discloses all aspects of claim 17. Further note that Soatto discloses an apparatus in figure 2.

Regarding claim 18, please see the rejection of claim 8 above as it discloses all aspects of claim 18. Further note that Soatto discloses an apparatus in figure 2.

Regarding claim 19, please see the rejection of claims please see the rejection of claim 3 above. Further note that Soatto discloses an apparatus in figure 2.

Regarding claim 20, please see the rejection of claim 11 above. Further note that Soatto discloses an apparatus in figure 2.

Regarding claim 21, please see the rejection of claims 4-7. Further note that Soatto discloses an apparatus in figure 2.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Black et al (5802220, which discloses facial tracking). Tamura (4852184 disclose placing frames on a face). Fukuma (6634754 discloses eyeglass placing method).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571)272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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8/15/06



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